

**1. PRODUCT AND COMPANY IDENTIFICATION:**

**PRODUCT NAME:** Liquid Soldering Flux 83-399

**MANUFACTURED FOR:** Kimball Midwest  
4800 Roberts Road  
Columbus, OH 43228  
Phone: 800-233-1294

**EMERGENCY TELEPHONE NUMBER:** Chemtrec 800-424-9300

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**2. HAZARD IDENTIFICATION:**

**Emergency Overview:** This product is normally not considered hazardous as shipped. Avoid eye contact or inhalation of dust from the product. When this product is used in a welding process, the most important hazards are welding fumes and heat.

**Classification of the Substance/Mixture**

**CLP/GHS Classification (1272/2008):**

**Skin Corrosion/Irritation, Category 1B**

**Skin Sensitization, Category 1**

**Eye Damage/Irritation, Category 1**

**Specific Target Organ Toxicity – Single Exposure, Category 3**

**Reproductive Toxicity, Category 1B**

**Chronic Aquatic Toxicity, Category 2**

**EU Classification (67/548/EEC):**

**Toxic (T), Corrosive (C), Harmful (Xn), Irritant (Xi), Dangerous for the Environment (N), R61, R34, R62, R37, R43, R51/53**

**Hazardous Classification per 29CFR 1910.1200 (Rev. July 1, 2012):**

**Skin Corrosion/Irritation, Category 1B**

**Skin Sensitization, Category 1**

**Eye Damage/Irritation, Category 1**

**Specific Target Organ Toxicity – Single Exposure, Category 3**

**Reproductive Toxicity, Category 1B**

**Chronic Aquatic Toxicity, Category 2**

**Labelling:**



**Symbols:**

**Signal Word:** Danger

**Hazard Statements:**

**H314** – Causes severe skin burns and eye damage.

**H317** – May cause an allergic skin reaction.

**H318** – Causes serious eye damage.

**H335** – May cause respiratory irritation.

**H336** – May cause drowsiness or dizziness.

**H360Df** – May damage the unborn child. Suspected of damaging fertility

**H411** – Toxic to aquatic life with long lasting effects.

**Precautionary Statements:**

- P201** – Obtain special instructions before use.  
**P202** – Do not handle until all safety precautions have been read and understood.  
**P261** – Avoid breathing dust/fume/gas/mist/vapours/spray.  
**P264** – Wash skin and hair thoroughly after handling.  
**P271** – Use only outdoors or in a well-ventilated area.  
**P272** – Contaminated work clothing should not be allowed out of the workplace.  
**P273** – Avoid release to the environment.  
**P280** – Wear protective gloves/protective clothing/eye protection/face protection.  
**P281** – Use personal protective equipment as required.  
**P301+P330+P331** – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
**P303+P361+P353** – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
**P304+P340** – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
**P305+P351+P338** – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
**P308+P313** – IF exposed or concerned: Get medical advice/attention.  
**P312** – Call a POISON CENTER or doctor/physician if you feel unwell.  
**P333+P313** – If skin irritation or rash occurs. Get medical advice/attention.  
**P363** – Wash contaminated clothing before reuse.  
**P391** – Collect spillage.  
**P403+P233** – Store in a well-ventilated place. Keep container tightly closed.  
**P405** – Store locked up.  
**P501** – Dispose of contents/container in accordance with local/regional/national/international regulations.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Identity	CAS #	Range %	OSHA PEL (mg/m3)	ACGIH-TLV (mg/m3)	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)	Hazardous Classification per 29CFR 1910.1200 (Rev. July, 2012)
Amino Ethylethanolamine	111-41-1	20-40	NA	NA	No	Repr. Cat. 2  (T) R61  (C) R34  (Xn) R62  (Xi) R43	(H317) Skin Sens. 1  (H314) Skin Corr. 1B  (H360Df) Repr. 1B 	(H317) Skin Sens. 1  (H314) Skin Corr. 1B  (H360Df) Repr. 1B 
Ammonium Fluoborate	13826-83-0	15-20	2.5 (as F)	2.5 (as F)	No	 (C) R34	(H314) Skin Corr. 1B 	(H314) Skin Corr. 1B 
Zinc Oxide	1314-13-2	5-15	5	5	No	 (N) R50/53	(H410) Aquatic C. 1 	(H410) Aquatic C. 1 
Triethanolamine	102-71-6	20-40	NA	NA	No	Not Dangerous	Not Hazardous	Not Hazardous

**Important** This section covers the materials of which the products manufactured. The fumes and gases produced during normal use of this product are covered in section 10. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

### 4. FIRST AID MEASURES:

- Inhalation:** Remove to fresh air immediately or administer oxygen. Get medical attention immediately.  
**Skin:** Flush skin with large amounts of water. If irritation develops and persists, get medical attention.  
**Eye:** Flush eyes with water for at least 15 minutes. Get medical attention.  
**Ingestion:** Obtain medical attention immediately if ingested. Rinse mouth.

### 5. FIRE-FIGHTING MEASURES:

**Suitable Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Unsuitable Extinguishing Media:** Not applicable

**Specific Hazards Arising From Chemical:** Decomposition may produce NO<sub>2</sub> fumes. Hydrofluoric acid solution may be formed within water run-off. Ammonia, Boron Oxide or Fluoride fumes may be released. Carbon Oxides and Zinc/Zinc Oxides

**Protective Equipment:** Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

#### 6. ACCIDENTAL RELEASE MEASURES:

**Personal Precautions:** Refer to section 8.

**Environment Precautions:** Refer to section 13.

**Cleaning Measures:** Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

#### 7. HANDLING AND STORAGE:

**Precautions for Safe Handling:** Handle with care to avoid stings or cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

**Conditions for Safe Storage:** Store in cool, dry place in closed packages. Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

#### 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION:

**Engineering Controls:** Avoid exposure to welding fumes, spatter, heated materials and dust. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Keep work place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

**Exposure limits:** Use industrial hygiene equipment to ensure that exposure does not exceed applicable national exposure limits. The limits defined under section 3 can be used as guidance. Unless noted, all values are for 8 hour time weighted average. For information about welding fume analysis refer to section 10.

**Biological limits:** No available data

**Personal protection:**

**Respiratory protection:** Use an air purifying dust respirator when welding or brazing in a confined space, or when local exhaust or ventilation is not sufficient to keep exposure values within safe limits.

**Hands protection:** Wear appropriate gloves to prevent skin contact.

#### EN 12477: Protection gloves for welders

Requirements (EN Levels)	Type A	Type B
Abrasion (Cycles)	2 (500)	1 (100)
Cut (Factor)	1 (1.2)	1 (1.2)
Tear (Newton)	2 (25)	1 (10)
Puncture (Newton)	2 (60)	1 (20)
Burning Behaviour	3	2
Contact Heat	1	1
Convective Heat	2	-
Small Splashes	3	2
Dexterity	1 (11)	4 (6.5)

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (°C) is 100 and the threshold time (seconds) >15.

**Eyes protection:** Welder's helmet or face shield with colour absorbing lenses. Shield and filter to provide protection from harmful UV radiation, infra red and molten metal approved to standard EN379. Filter shade to be a minimum of shade 9.

**Skin protection:** Heat-resistant protective clothing. Wear safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Clothing should be selected to suit the level, duration and purpose of the welding activity.

Class 1	
Impact of Spatter	15 Drops
Heat Transfer (radiation)	RHTI 24 $\geq$ 7 seconds
Process	<p>Manual welding with light formation of spatter and drops</p> <ul style="list-style-type: none"> <li>• Gas Welding</li> <li>• TIG Welding</li> <li>• MIG Welding</li> <li>• Micro plasma welding</li> <li>• Brazing</li> <li>• Spot Welding</li> <li>• MMA Welding (with rutile-covered electrode)</li> </ul>
Environmental Conditions	<p>Operation of machines</p> <ul style="list-style-type: none"> <li>• Oxygen cutting machines</li> <li>• Plasma cutting machines</li> <li>• Resistance welding machines</li> <li>• Machines for thermal spraying</li> <li>• Bench welding</li> </ul>

Class 2	
Impact of Spatter	25 Drops
Heat Transfer (radiation)	RHTI 24 $\geq$ 16 seconds
Process	<p>Manual welding with heavy formation of spatter and drops</p> <ul style="list-style-type: none"> <li>• MMA welding (with basic or cellulose-covered electrodes)</li> <li>• MAG welding (with CO2 or mixed gases)</li> <li>• MIG Welding (with high current)</li> <li>• Self shielded flux core arc welding</li> <li>• Plasma cutting</li> <li>• Gouging</li> <li>• Oxygen cutting</li> <li>• Thermal spraying</li> </ul>
Environmental Conditions	<p>Operation of machines</p> <ul style="list-style-type: none"> <li>• In confined spaces</li> <li>• At overhead welding/cutting or in comparable constrained positions</li> </ul>

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**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**Appearance:** Gel

**Color:** Amber

**Odour:** Ammonia

**Odour Threshold:** Not Available

**pH Value:** Not Available

**Melting Point/Melting Range:** Not Available

**Freezing Point:** Not Available

**Boiling Point/Boiling Range:** Not Available

**Flash point:** Not Available

**Evaporation Rate:** Not Available

**Self-in flammability:** Not Available  
**Explosion limits:** Not Available  
**Vapour pressure:** (mm Hg): NA  
**Vapour density:** (Air= 1): NA  
**Density at 20°C:** 1.32 g/cm<sup>3</sup>  
**Bulk Density:** Not Available  
**Relative density:** Not Available  
**Solubility:** Freely soluble  
**Partition coefficient:** Not Available  
**Auto-ignition temperature:** Not Available  
**Decomposition temperature:** Not Available  
**Other Information:** No available data.

**10. STABILITY AND REACTIVITY:**

**Chemical Stability:** This product is stable under normal conditions.

**Hazardous Reactions:** Contact with chemical substances like acids or strong bases cause generation of gas.

**Conditions to Avoid:** Excess heat.

**Incompatible Materials:** Strong oxidants, sulphides and cyanides.

**Hazardous Decomposition Products:** Hydrofluoric Acid, Ammonia, NO<sub>2</sub>, and Boron Tri-Fluoride gases.

When this product is used in a welding process, hazardous decomposition product would include those from volatilization, reaction or oxidation of the material listed in section 3 and those from the base metal and coating. The amount of fumes generated from this product varies with welding parameters and dimensions.

**11. TOXICOLOGICAL INFORMATION:**

**Signs and Symptoms of Overexposure:** Amino Ethylethanolamine is extremely destructive to tissue of the mucous membrane and upper respiratory tract, eyes and skin. Other signs and symptoms are: spasms, inflammation and edema of the larynx, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, and shortness of breath, headache and nausea. Zinc Oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin.

**Acute Effects:** Overexposure to welding fumes may result in symptoms such as eye and skin burns, damage to digestive and respiratory system, abdominal pain, vomiting and effect on the central nervous system. Amino Ethylethanolamine is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, and nausea. Zinc oxide dust or fume can irritate the respiratory tract. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to skin.

LD/LC50 Values that are relevant for classification		
Amino Ethylethanolamine 111-41-1		
Oral	LD50	3000 mg/kg (rat)
Dermal	LD50	2250 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Zinc Oxide 1314-13-2		
Oral	LD50	7950 mg/kg (mouse)
Inhalation	LD50	2500 mg/m <sup>3</sup> (mouse)
	LC50	1.1 mg/l (96h) (rainbow trout)

LD/LC50 Values that are relevant for classification		
Triethanolamine 102-71-6		
Oral	LD50	5530 mg/kg (rat)
Oral	LD50	2200 mg/kg (rabbit)
Oral	LD50	2200 mg/kg (guinea pig)
Dermal	LD50	22.5 g/kg (rabbit)
	LC50	1000 mg/l (96h) (bluegill)

**Chronic Effects:** Prolonged or repeated exposure of Zinc Oxide can cause reversible liver enzyme abnormalities. Triethanolamine: Kidney injury may occur.

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## 12. ECOLOGICAL INFORMATION:

**Toxicity:** No available data.

**Persistence and Degradability:** No available data.

**Bio accumulative Potential:** No available data.

**Mobility in Soil:** No available data.

**Other Adverse Effects:** No available data.

Welding materials could degrade into components originating from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

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## 13. DISPOSAL CONSIDERATIONS:

**Product:** For product elimination, consult recycling companies or appropriate local authority.

**Package:** May be disposed in approved landfills provided local regulations are observed.

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## 14. TRANSPORT INFORMATION:

**UN-number:** UN1760

**UN proper shipping name:** Corrosive liquid, N.O.S (aminoethylethanolamine, ammonium Fluoborate)

**Transport hazard class:** 8

**Packing group:** II

**Environmental hazards:** Product contains environmentally hazardous substances: zinc oxide

**Special precautions for users:** Not applicable

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## 15. REGULATORY INFORMATION:

**Safety, health and environment regulations/legislation specific for the substance or mixture:** Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

**Warning:** Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. Electric shock can kill. Arc rays and sparks can injure eyes and burn skin. Wear correct hand, head, eye and body protection.

**Chemical safety assessment:** No

USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous. This product contains or produces a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.) United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

### EPCRA/SARA Title III Toxic Chemicals

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA reporting. See Section 3 for weight percentage.

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## 16. OTHER INFORMATION:

The information in this document is believed to be correct as of the date issued. However, no warranty is expressed to be implied regarding the accuracy or completeness of this information. This information and product are furnished on the condition that the person receiving them shall make his own determinations as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.

This Safety Data Sheet complies with the EC directives 91/155/EEC and 93/112/EEC, including modifications 2001/58/EC.

Complies with OSHA Communication Standard 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499

**Hazard Statements:**

**H314** – Causes severe skin burns and eye damage.

**H317** – May cause an allergic skin reaction.

**H318** – Causes serious eye damage.

**H335** – May cause respiratory irritation.

**H336** – May cause drowsiness or dizziness.

**H360Df** – May damage the unborn child. Suspected of damaging fertility

**H410** – Very toxic to aquatic life with long lasting effects

**H411** – Toxic to aquatic life with long lasting effects.

**R-Phrases:**

**R34** – Causes burns.

**R43** – May cause sensitization by skin contact.

**R50/53** – Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**R51/53** – Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**R61** – May cause harm to the unborn child.

**R62** – Possible risk of impaired fertility

**S-Phrases:**

**S26** – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**S36/37/39** – Wear suitable protective clothing, gloves and eye/face protection.

**S45** – In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

**S60** – This material and its container must be disposed of as hazardous waste.

**S61** – Avoid release to the environment.

End of the document